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DDT AS A PREHATCHING TREATMENT FOR CONTROL
OF SNOW-WATER MOSQUITOES

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DDT and other chlorinated hydrocarbon compounds have been found to be remarkably effective against many species of mosquitoes when used on water where larvae are present. Larvae of snow-water, or mountain, mosquitoes can be controlled in this way, but it is exceedingly difficult or impossible to get to the mosquito areas in the spring because of passable roads. Larval development is usually complete before cars and spray equipment can be driven over the roads and trails. The treatment of swales or ponds in mountain areas several months before melting snow causes mosquito eggs to hatch has been considered for several years, but only since the advent of DDT and other residual insecticides has there been much hope for this prehatching treatment.

Snow-water mosquitoes create a nuisance problem to timber and road workers, vacationists, resort owners, and others. Many recreational areas cannot be used to full advantage because of mosquito annoyance. The public is aware that much greater use could be made of many areas if mosquitoes could be controlled. The results of recent tests are reported here as a basis for setting up new control procedures where such procedures are applicable.

The important species of mosquitoes in mountain areas belong to the genus Aedes. This group is represented in the Pacific Northwest by 13 or 20 species, many of which are of minor importance. The 5 most common and widely distributed species are Aedes communis (Deg.), A. hexodontus Dyar, A. increpitus Dyar, A. fitchii (F. and Y.), and A. cinereus Meig. Aedes mosquitoes lay their eggs in the soil and duff in swales and depressions after the water has receded or along the shore just above the water line in swampy areas where the water remains. The eggs hatch in the spring when flooded by melting snow water.

The length of the larval period varies with the temperature, which may be as low as 32° F. for extended periods. Aedes adults do not live so long in the mountains as do those of species found at lower elevations, but the season of mosquito annoyance may last for 1 to 3 months, because as snow banks melt new broods are emerging. Adults are more prevalent near the source of emergence, but can become a nuisance for considerable distances. Their flight range varies in different localities being influenced by such factors as air currents, velocity of prevailing winds, and species.

Many experiments have been conducted in the mountain areas of Washington and Oregon to determine the value of using the new insecticides

as prehatching treatments on mosquito-breeding areas in the early fall months when roads are passable and conditions are favorable for work (Roth et al. 1). In September and October known amounts of insecticide were applied in various formulations and by different methods. The following May and June, when the mosquito eggs were hatching, these areas were examined to determine the effectiveness of the treatments.

Oil solutions, water emulsions, wettable powders, and dusts of DDT were found to be about equally effective. Oil solutions and emulsions were applied with compressed-air sprayers. Wettable powders and dusts were broadcast by hand over the plots. This is the easiest way to apply dusts or wettable powders over the swales. Good coverage of the area is desirable, but it is not so essential as when minimum dosages are being applied in regular larvicidal applications.

Most of the experimental work was done with DDT, and it is suggested that this compound be utilized in control. There is evidence, however, that TDE, chlordane, chlorinated camphene, and the methoxy analog of DDT are also effective (Roth et al. 1) and may be substituted where price and availability dictate a change.

DDT applied at the rate of 0.5 to 1 pound per acre prevented mosquito development in all the experiments, and in a few instances a dosage of 2 pounds per acre was effective for 2 years. The suggested dosage is 1 pound of active ingredient per acre. This dosage would require 2 pounds of a 50-percent wettable powder, 10 quarts of a 5-percent oil solution, or 10 pounds of a 10-percent dust.

It is, of course, obvious that treatment be applied to known breeding areas. Many of the mosquito-breeding swales are known to Forest Service workers and others. However, it may be necessary to survey an area in the spring to determine the exact locations of the swales in which mosquito larvae are present. Many of the swales are less than a half acre in size, whereas some may cover as many as 100 acres. In measuring the swale care should be exercised in determining the high-water mark. Frequently the size of an area is underestimated and underdosage results.

Precautions

DDT should not be sprayed on streams or ponds containing fish. Fortunately, nearly all swales are dry during the summer, and even when snow waters are present in the spring, fish are not frequently found. There is practically no danger to wildlife, since the swales are usually small and scattered, and the recommended treatment is soon covered with snow and ice for several months of the year.

Literature Cited

- (1) Roth, A. R., Yates, W. W., and Lindquist, A. W.
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